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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/834,696	04/12/2001	Jerrold L. King	MICR135.02	4676

7590 06/02/2005
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EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/834,696

Applicant(s)

KING ET AL.

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to applicant's arguments filed February 28, 2005.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 23 and 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15 and 16 of King U.S. Patent No. 5,677,566 in view of Chun US Patent NO. 5,856,212.
4. King claims a semiconductor chip package, comprising: a semiconductor chip; conductive leads electrically connected to and extending along ("adjacent to") encapsulating material encapsulating the chip and the conductive leads (i.e. "chip assembly disposed within an encapsulating material"), solder balls disposed in the encapsulating material ("bumps extending through encapsulating") and a portion protruding from the encapsulating material and contacting a conductive lead, bond pads aligned and the insulating material on the surface of the chip, the Insulating material

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having holes therein to enable electrical connection to the bond pads; conductive leads attached to the insulating material, each lead electrically connected to the bond pads.

5. King does not claim a chip having a first and second surface perpendicular to and intersecting the first surface and bond pads aligned on the first surface or that a continuous body of encapsulating material substantially encapsulates the chip, leads.

6. However, Chun discloses a chip having a first (i.e. top horizontal portion) and second surface perpendicular (i.e. side vertical portion) to and intersecting the first surface (i.e. rectangular) and bond pads (17) aligned on the first surface or that a continuous body of encapsulating material (i.e. uninterrupted extension of composition, 14) substantially encapsulates (i.e. all except where conductive material protrudes through encapsulant) the chip (11) and leads (12).

7. It would have been obvious to one of ordinary skill in the art to incorporate with the chip and leads of King, a chip having a first and second surface perpendicular to and intersecting the first surface and bond pads aligned on the first surface and a continuous body of encapsulating material substantially encapsulates the chip, leads in order to form a thin package as taught by Chun (Abstract).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

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applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 23 is rejected under 35 U.S.C. 102(e) as being anticipated by Chun (U.S. 5,856,212).

9. Chun (Fig. 2C) discloses a semiconductor chip package, comprising:
a semiconductor chip (11) having a first surface (top horizontal portion) and a second surface perpendicular (i.e. side vertical portion) to and intersecting the first surface;
conductive leads (12) electrically connected (i.e. 17) to and extending along the first surface of the chip at least to the intersection of the first and second surfaces;
a continuous body of encapsulating material (14) substantially encapsulating the chip and the conductive leads; and solder balls (15) each having a first portion disposed in the encapsulating material and contacting a conductive lead and a second portion protruding from the encapsulating material.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chun (U.S. 5,856, 212) in combination with McShane et al. (U.S. 5,157,480) and Karavakis et al. (U.S. 5,663,106).

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12. Chun discloses the elements stated in paragraph 9 of this office action, but does not appear to expressly show an insulating layer on the surface of the chip with the layer having holes therein to enable connection to bond pads.

13. McShane teaches the use of a solder mask to attach solder balls (Col. 5, Lines 57-66).

14. It would have been obvious to one of ordinary skill in the art to incorporate a solder mask over the chip of Chun in order to attach solder balls/material as taught by McShane (Col. 5, Lines 57-66).

15. However, McShane does not explicitly teach that its solder mask is an insulating material.

16. Karavakis utilizes an insulating solder mask (cl. 2, Lines 30-31 of Karavakis) over a chip.

17. It would have been obvious to one of ordinary skill in the art to form the modified mask of Chun and McShane with an insulating material in order to form solder mask as required by McShane (Col. 5, Lines 57-66).

Response to Arguments

18. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art in Cavasin (U.S. 5,302,849) discloses the use of leads extending along a first surface of a chip substantially encapsulated.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jmm
May 3, 2005


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800